Sub C2

2. (Amended) A DNA segment according to [Claim 1 wherein said segment comprises genomic T11 or cDNA clone TR4] Figure 3 and allelic variations thereof.

C1

3. (Amended) A DNA segment [according to claim 1,] consisting essentially of the sequence that encodes a human type α platelet derived growth factor receptor protein wherein said protein has the amino acid sequence defined in Figure 3 and allelic variations thereof.

Sub N2

6. (Amended) A method of producing a human type α[PDGF] platelet derived growth factor receptor protein comprising culturing cells according to claim 5 under conditions such that said protein is produced and isolating said protein from said cells.

C2

7. (Amended) A substantially pure form of human α platelet derived growth factor [PDGF] receptor protein [having] comprising the amino acid sequence defined in figure 3.

N

Please add new claims 16, 17, 18 and 19.

Sub C3

--16. A DNA segment according to claim 3 encoding at least 5 consecutive amino acids as shown in Figure 3.

C3

17. A DNA segment called clone T11 having the accession # _____.

18. A recombinant DNA molecule comprising a DNA segment according to claim 3 and a vector.

19. An in vitro culture of cells transformed with a DNA segment according to claim 3.--

IN THE SPECIFICATION

Page 53, line 2, after "on", delete "IL-3" and insert --interleukin 3 (hereinafter, IL-3)--.

In each instance of its use, as listed below, delete the citation "(2, 3)" and insert --(J. Downward et al., ibid. 307, 521 (1984); A. Ullrich et al., ibid. 309, 418 (1984); C.J. Sherr et al., Cell 41, 665 (1985); L. Coussens et al., Nature 320, 277 (1986))--

Page 2, line 11.

In each instance of its use, as listed below, delete the citation "(4)" and insert --(J.M. Bishop, Science 235, 305 (1985); R.A. Weinberg, ibid. 230, 770 (1985); S.K. Hanks, A.M. Quinn, T. Hunter, ibid. 241, 42 (1988))--

Page 2, line 13.

In each instance of its use, as listed below, delete the citation "(23)" and insert --(R. Ross, E.W. Raines, D.F. Bowen-Pope, Cell 46, 155 (1986))--

Page 2, line 26.

Page 59, line 22.

In each instance of its use, as listed below, delete the citation "(1, 25, 26)" and insert --(R.F. Doolittle et al., Science 221, 275 (1983); M.D. Waterfield et al., Nature 304, 35 (1983); K.C. Robbins et al., ibid. 305, 605 (1983); C.-H. Heldin et al., Nature 319, 511 (1986); P. Stroobant and M.D. Waterfield, EMBO J. 3, 2963 (1984))--

C6

Page 3, line 5.

In each instance of its use, as listed below, delete the citation "(24)" and insert --(A. Johnsson, C.-H. Heldin, B. Westermark, A. Wasteson, Biochem. Biophys. Res. Commun. 104, 66 (1982))--

entered

Page 3, line 14.

In each instance of its use, as listed below, delete the citation "(37)" and insert --(P. Beckman et al., Science 241, 1346 (1988))--

entered

Page 3, line 16.

Page 32, line 14.

Page 58, line 4.

Page 61, line 24.

In each instance of its use, as listed below, delete the citation "(27)" and insert --(C.-H. Heldin et al., ibid. 7, 1387 (1988); C.E. Hart et al., Science 240, 1529 (1988))--

C7

Page 4, line 5.

In each instance of its use, as listed below, delete the citation "(14)" and insert --(R.G.K. Gronwald et al., ibid. 88, 3435 (1988); L. Claesson-Welsh et al., Mol. Cell. Biol. 8, 3476 (1988))--

C8

Page 4, line 24.

Page 41, line 7.

In each instance of its use, as listed below, delete the citation "(28)" and insert --(J.A. Escobedo et al., ibid. 240, 1532 (1988))--

C9

Page 4, line 25.

Page 58, line 9.

In each instance of its use, as listed below, delete the citation "(5)" and insert --(C.R. King, M.H. Kraus, S.A. Aaronson, ibid. 229, 974 (1985); G.D. Kruh et al., ibid. 234, 1545 (1986))--

C10

Page 6, line 2.

In each instance of its use, as listed below, delete the citation "(3, 6, 7)" and insert --(C.J. Sherr et al., Cell 41, 665 (1985); L. Coussens et al., Nature 320, 277 (1986); Y.

C11

C11 cont Yarden et al., Nature 323, 226 (1986); P. Besmer et al., ibid. 320, 415 (1986); Y. Yarden et al., EMBO J. 6, 3341 (1987))--

Page 8, lines 18-19.

In each instance of its use, as listed below, delete the citation "(10)" and insert --(Subject of the U.S. Patent

C12 Application entitled "Efficient Directional Cloning System", to be filed February, 1989)--

Page 21, line 14.

Page 38, line 7.

In each instance of its use, as listed below, delete the citation "(49)" and insert --(C.R. King, N.A. Giese, K.C.

C13 Robbins, S.A. Aaronson, Proc. Natl. Acad. Sci. USA 82, 5295 (1985))--

Page 22, line 6.

Page 31, line 15.

In each instance of its use, as listed below, delete the

C14 citation "(48)" and insert --(H.D. Lehrach, D. Diamond, J.M. Wozney, H. Boedtker, Biochemistry 16, 4743 (1977))--

Page 24, line 5.

Page 30, line 26.

In each instance of its use, as listed below, delete the citation "(41)" and insert --(E.M. Southern, J. Med. Biol. 98, 503 (1975))--

Page 29, line 7.

In each instance of its use, as listed below, delete the citation "(42)" and insert --(P.W.J. Rigby, M. Dieckerman, C. Rhodes, P. Berg ibid. 113, 237 (1977))--

Page 29, line 8.

In each instance of its use, as listed below, delete the citation "(43)" and insert --(G.M. Wahl, M. Stern, G.R. Stark, Proc. Natl. Acad. Sci. USA 76, 3683 (1979))--

C15

Page 29, line 10.

In each instance of its use, as listed below, delete the citation "(44)" and insert --(A. Hampe, M. Gobet, C.J. Sherr, F. Galibert, ibid. 81, 85 (1984))--

Page 29, line 17.

In each instance of its use, as listed below, delete the citation "(6)" and insert --(Y. Yarden et al., Nature 323, 226 (1986))--

Page 29, line 19.

Page 36, line 11.

Page 37, line 23.

Page 38, line 27.

Page 60, line 7.

In each instance of its use, as listed below, delete the citation "(45)" and insert --(F. Sanger, S. Nicklen, A.R. Coulson, ibid. 74, 5463 (1977))--

Page 30, line 12.

In each instance of its use, as listed below, delete the citation "(47)" and insert --(M.E. Harper and G.F. Saunders, Chromosoma (Berl.) 83, 431 (1981); N.C. Popescu et al., Cytogenet. Cell Genet 39, 73 (1985))--

C16

Page 30, line 22.

In each instance of its use, as listed below, delete the citation "(50)" and insert --(M. Wigler et al., Cell 11, 223 (1977))--

Page 31, line 20.

In each instance of its use, as listed below, delete the citation "(51)" and insert --(H. Towbin, T. Staehelin, J. Gordon, Proc. Natl. Acad. Sci. USA 76, 4350 (1979))--

Page 32, line 3.

In each instance of its use, as listed below, delete the citation "(52)" and insert --(W.M.Hunter and F.C. Greenwood, Nature 194, 495 (1962))--

Page 32, line 9.

In each instance of its use, as listed below, delete the citation "(53)" and insert --(E.W. Raines and R. Ross, J. Biol. Chem. 257, 5154 (1982))--

Page 32, line 11.

In each instance of its use, as listed below, delete the citation "(54)" and insert --(J.J. Wang, Mol. Cell. Biol. 5, 3640 (1985))--

Page 33, line 1.

Page 83, line 12.

In each instance of its use, as listed below, delete the citation "(8)" and insert --(D.Q. Xu, S. Guilhot, F. Galibert, Proc. Natl. Acad. Sci. USA 82, 2862 (1985))--

C19

Page 34, line 14.

In each instance of its use, as listed below, delete the citation "(7)" and insert --(P. Besmer et al., ibid. 320, 415 (1986); Y. Yarden et al., EMBO J. 6, 3341 (1987))--

C18

Page 35, line 2.

line 24.

Page 36, line 12.

In each instance of its use, as listed below, delete the citation "(3, 6)" and insert --(C.J. Sherr et al., Cell 41, 665 (1985); L. Coussens et al., Nature 320, 277 (1986); Y. Yarden et al., Nature 323, 226 (1986))--

C19

Page 35, line 23.

In each instance of its use, as listed below, delete the citation "(9)" and insert --(R. Breathnad and P. Chambon, Annu. Rev. Biochem. 50, 349 (1981))--

C20

Page 35, line 27.

In each instance of its use, as listed below, delete the citation "(11)" and insert --(M. Kozak, Cell 44, 283 (1986))--

Page 39, line 2.

In each instance of its use, as listed below, delete the citation "(12)" and insert --(G. von Heijne, Nucleic Acids Res. 14, 4683 (1986))--

Page 39, line 11.

In each instance of its use, as listed below, delete the citation "(13)" and insert --(J.E. Smart et al., Proc. Natl. Acad. Sci USA 78, 6013 (1981))--

Page 40, line 9.

In each instance of its use, as listed below, delete the citation "(15)" and insert --(L. d'Auriol et al., Hum. Genet 78, 374 (1988))--

Page 42, line 12.

Page 60, line 4:

In each instance of its use, as listed below, delete the citation "(16)" and insert --(C.A. Griffin et al., Cytogenetic Cell Genet 45, 67 (1987))--

Page 42, line 13.

In each instance of its use, as listed below, delete the citation "(17)" and insert --(A.D. Luster et al., Proc. Natl. Acad. Sci. USA 84, 2868 (1987))--

Page 42, line 14.

In each instance of its use, as listed below, delete the citation "(18)" and insert --(A. Richmond et al., EMBO J. 7, 2025 (1988))--

Page 42, line 15.

In each instance of its use, as listed below, delete the citation "(19)" and insert --(M.E. Harper and G. Dugaiczyk, J. Hum. Genet. 35, 565 (1983))--

Page 42, line 16.

In each instance of its use, as listed below, delete the citation "(20)" and insert --(M.A. Furguson-Smith et al., Cytogenet Cell Genet 40, 628 (1985))--

Page 42, line 17.

In each instance of its use, as listed below, delete the citation "(21)" and insert --(S.P. Ball, P.J.L. Cook, M. Mars, K.E. Buckton, Ann Hum. Genet 46, 35 (1982))--

C21

Page 42, line 18.

In each instance of its use, as listed below, delete the citation "(3, 7)" and insert --(C.J. Sherr et al., Cell 41, 665 (1985); L. Coussens et al., Nature 320, 277 (1986); P. Besmer et al., ibid. 320, 415 (1986); Y. Yarden et al., EMBO J. 6, 3341 (1987))--

C22

Page 43, line 20.

In each instance of its use, as listed below, delete the citation "(22)" and insert --(A.R. Frackelton, P.M. Tremble Jr., L.T. Williams, J. Biol. Chem. 259, 7909 (1984); T.O. Daniel et al., Proc. Natl., Acad. Sci. USA 82, 2684 (1985))--

C23

Page 47, line 7.

In each instance of its use, as listed below, delete the citation "(38)" and insert --(H. Seppa et al., J. Cell Biol. 92, 584 (1982); G.R. Grotendorst et al., J. Cell Physiol. 113, 261 (1982); T.F. Deuel, R.M. Senior, J.S. Huang, G.L. Griffin, J. Clin. Invest. 69, 1046 (1982))--

C24

Page 58, line 18.

In each instance of its use, as listed below, delete the citation "(39)" and insert --(K. Mellstrom et al., J. Cell Motility and Muscle Res. 4, 589 (1983))--

C25

Page 58, line 19.

In each instance of its use, as listed below, delete the citation "(40)" and insert --(E. Rozengurt, M. Rodriquez-Pnena, K.A. Smith, Proc. Natl. Acad. Sci. USA 80, 7244 (1983); R.J. Davis and M.P. Czech, ibid. 82, 4080 (1985))--

C26

Page 58, line 20.

In each instance of its use, as listed below, delete the citation "(29)" and insert --(M.M. Le Beau et al., ibid. 231, 984 (1986))--

Page 60, line 8.

In each instance of its use, as listed below, delete the citation "(30)" and insert --(D.E. Comings, Nature 238, 455 (1972))--

Page 60, line 10.

In each instance of its use, as listed below, delete the citation "(31)" and insert --(J. Massague, J. Biol. Chem. 258, 13614 (1983))--

Page 60, line 28.

In each instance of its use, as listed below, delete the citation "(32)" and insert --(R. Derynck et al., Cancer Res. 47, 707 (1987); D.C. Lee et al., Mol. Cell. Biol. 5, 3644 (1985); D.R. Twardzik, Cancer Res. 45, 5413 (1985); R.J. Coffey et al., Nature 328, 817 (1987))--

C27

Page 61, line 2.

In each instance of its use, as listed below, delete the citation "(33, 34)" and insert --(E.S. Kawasaki et al., Science 230 291 (1985); C. Betsholtz et al., Nature 320, 695 (1986))--

C28

Page 61, line ~~21~~ 8.

In each instance of its use, as listed below, delete the citation "(35)" and insert --(A. Ullrich et al., Nature 313 (1985); Y. Ebina et al., Cell 40, 747 (1985); A. Ullrich et al., EMBO J. 5, 2503 (1986))--

C29

Page 61, line 10.

In each instance of its use, as listed below, delete the citation "(34, 36)" and insert --(C. Betsholtz et al., Nature 320, 695 (1986); R.A. Seifert, S.M. Schwartz, D.F. Bowen-Pope, Nature 34, 669 (1984); M. Jaye et al., Science 228, 882 (1985); J. Nilsson et al., Proc. Natl. Acad. Sci. USA 82, 4418 (1985); T. Collins et al., Nature 316, 748 (1985))--

C30

Page 61, line 21.

In each instance of its use, as listed below, delete the citation "(46)" and insert --(J. Kyte and R.F. Doolittle, J. Mol. Biol. 157, 105 (1982))--

NE

Page 77, line 11.

Page 63, beginning through page 67, end, delete entire section entitled "REFERENCES".

Page 9, line 13, delete "call" and insert --termed--;

line 16, delete "disclose" and insert --disclosed--.

Page 15, line 12, delete "T_4 gene" and insert --T_4 cDNA--.

line 13, delete "hydrophobicity" and insert --hydropathicity--.

line 6, after "analysis", add --Hybridization of a v-*Fms* probe (A) or a mouse PDGF receptor probe (B) to human placenta (lane 1 and 3) or thymus (lane 2 and 4) DNAs under

C31

C31 Cont. stringent (50% formamide; lane 1 and 2) or relaxed (30% formamide; lane 3 and 4) hybridization conditions. Arrows indicate the 12-Kbp *Echo*RI fragment detected under relaxed conditions by both v-*Fms* and mouse PDGF-R probes.--

line 9, after "clones", add --The restriction map shows [lambda]T11 genomic clones (solid lines); T11 cDNA C32 clones (solid bars); and PDGF-R cDNA clones (open bars). Coding regions within 3 fragments, as determined by nucleotide sequencing analysis, are indicated by black boxes labeled a, b, and c.--

line 12, after "gene." add --Nucleotides are numbered at the left. The predicted amino acid sequence of the long open reading frame is shown above the nucleotide sequence. C33 Amino acids are numbered over the amino acids: starting at the putative initiation codon. The potential N-terminal signal sequence is underlined. Potential sites of N-linked glycosylation are overlined, and cystine residues are boxed. The putative single transmembrane region is indicated by a shaded bar. The potential ATP binding site in the kinase domain is indicated by circles over Gly at residue 600, 602 and 605 and Lys at residues 627. The putative tyrosine autophosphorylation site at residue 849 is indicated by *. The regions of the [lambda]T11 genomic sequence defined by exons a, b and c are underlined. The

C 33 cont AATAAA box close the polyadenylated 3' end of the cDNA is underlined as well.--

line 17, after "receptors." add --A schematic diagram of the predicted protein domains shows the signal sequence (S; black box), ligand binding domain (LB), transmembrane domain (TM; second black box), juxtramembrane C 34 domain (JM), tyrosine kinase domains (TK1, TK2; hatched boxes), inter-kinase domain (IK) and carboxyl terminus (C). The hydropathicity profile was calculated by the method of Kyte and Doolittle. The homology percentage is shown refer to identical amino acids within each respective domain. Abbreviations: IR, insulin receptor; EGF-R, epidermal growth factor receptor; ND, not determined.--

line 19, after "gene." add --(A) Distribution of the silver grains on normal human chromosomes by *in situ* C 35 hybridization with pT11-P probe (clone of the 3.6-Kbp *PstI* genomic fragments) (see Figure 1). (B) Distribution of grains on chromosome 4.--

line 22, after "genes.", add --The same filter was first hybridized with the probe from pT11-HP (0.95-Kbp *Hind*III-*PstI* genomic fragment) (A) and then rehybridized with a C 36 PDGF-R cDNA probe (B). A different filter was first hybridized with T11 cDNA (3.5-Kbp *Bam*HI fragment of TR4 including the whole

coding region) (C) and then rehybridized with PDGF-R cDNA (3.8-KBP *Nde*I fragment of HPR2) (D). A and B contain poly (A)+ RNAs (5 μg per lane) extracted from human smooth muscle (lane 1), heart (lane 2), liver (lane 3), spleen (lane 4) or embryo (lanes 5 and 6). C and D contained total RNA (20 μg per lane) extracted from G402 leiomyoblastoma cells (lane 1), SK-LMS-1 leiomyosarcoma cells (lane 2), A1186 or A204 rhabdomyosarcoma cells (lanes 3 and 4), 8387 fibrosarcoma cells (lane 5), astrocytoma tissues (lanes 6 and 7), A1690 astrocytoma cells (lane 8), A1207 or A172 glioblastoma cells (lanes 9 and 10) or A875 melanoma cells (lane 11). Migration of 28S and 18S ribosomal RNA (markers) are as indicated.--

line 26, delete "T_{11} DNA" and insert --T_4 cDNA--;

line 27, after "vector." add --Detection of T11 and PDGF-R proteins with peptide antisera is shown in human cells lines (A) and COS-1 cell transfectants (B). (A) M426 human embryo fibroblast (lanes 1, 4, 7 and 10), 8387 fibrosarcoma cells (lanes 2, 5, 8 and 11), A204 rhabdomyosarcoma cells (lanes 3, 6, 9 and 12), (B) COS-1 cells (lanes 1 and 4), COS-1 cells transfected with vectors carrying T11 cDNA (lanes 2 and 3) or PDGF-R cDNA (lanes 5 and 6).--

Page 16, line 3, delete "T_{11}" and insert --T_4 cDNA--.

line 4, after "vectors." add --Results represent the mean value (± SD), of triplicate samples.--

C38

line 8, after "PDGF." add -- A204 (A), 8387 (B), or NIH/3T3 (C) cells were incubated with PDGF-BB (30 ng/ml) (lane 2), human PDGF (30 ng/ml), (lane 3), PDGF-AA (300 ng/ml) (lane 4), or 3nM acidic acid (vehicle control: lane 1). Cell lysates were immunoprecipitated with peptide antisera directed against predicted type α or type ß PDGF receptors (anti-T11 and anti-HPR, respectively). Immunoblot analysis was with antibodies to receptors or phosphotyrosine (anti-P-Tyr) (Wang, Mol. Cell Biol. **5**:3640 (1985)) as indicated above the blots. Arrows indicate the specific bands which were blocked in the presence of immunizing peptide.--

C39

line 13, after "receptor." add --Stimulation of DNA synthesis by PDGF-AB (triangles) or PDGF-BB (circles) in various cell lines is shown as follows: (A) mouse NIH/3T3; (B) human M426; (C) human AG1523; and (D) human M413.--

C40

line 18, after "form." add --Receptor binding of PDGF-AB (triangles) or PDGF-BB (circles) by human D32 cells were reconstituted with type α (open symbols) or type ß (filled symbols) PDGF receptors by transfection with vectors bearing the respective cDNA. The inset displays the same data replotted in the standard (semi-log) Scatchard format.--

C41

line 24, after "cells." add --DNA synthesis stimulation responses to PDGF-AB (triangles) or PDGF-BB (circles) by human D32 cells shown reconstituted with type α (upper panel) or type ß (lower panel) PDGF receptors.-- C42

Page 17, line 5, after "α receptors." add --Chemotaxic responses to PDGF-AB (triangles) or PDGF-BB (circles) by human D32 cells are shown reconstituted with type α (upper panel or type ß (lower panel) PDGF receptors.-- C43

line 11, after "PDGF-AB." add -- Responses of inositol phosphate formation and cytosolic calcium iron mobilization (i.e., $[CA^{2+}]i$; data in insets) to human PDGF-AB (triangles) or PDGF-BB (circles) by human D32 cells are shown reconstituted with type α (upper panel) or type ß (lower panel) PDGF receptors.-- C44

Page 31, line 23, delete "Triton" and insert --TRITON--.

line 23, after "X-100,", insert --(polyethylene glycol p-isocytlphennyl ether)--.

Page 32, line 19, delete "Triton" and insert --TRITON--.

Page 45, line 25, after "PDGF", delete "2". NE

Page 53, line 8, delete "does" and insert --dose--.

Page 73, delete lines 1-10.

Page 74, delete lines 1-8.